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U. S. DEPARTMENT OF AGRICULTURE

Wartime Farming on the Northern Great Plains



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE • Miscellaneous Publication No. 497

The Northern



Here is one of the largest and most important agricultural regions of the world.

Its grain and its cattle have been outstanding articles of commerce in world markets for half a century. Today, they are more vital than ever before. They are sinews of war.

Total war requires total production. This is as true of agriculture as it is of industry. Every man, every machine, every acre of our vast agricultural plant must produce its share of supplies for fighting men, for men and women at work, and for our allies in arms.

American agriculture must in the years just ahead produce more than it ever has before. The Department of Agriculture has set production goals never before reached in all our history. But they must be reached now.

With all that farmers and ranchers have learned about the handling of soil, water, and crops in the past generation, the goals can be reached—and in reaching them, American farmers need not experience again the dust, gullies, and debt that followed World War I.

The job will be hard—because there are two or three factors that make it so.

It would be easy to increase production of wheat—but we don't need more wheat. We have 2 years' supply on hand now and most of our allies have large reserves. We must raise more flax, more corn, more hay, grass, and fodder, more vegetables.



Great Plains

It would be easy to increase the numbers of cattle and sheep. But they cannot be increased beyond the carrying capacity of the range and the available feed supply, without inviting trouble. This may be a long war, and after that there will be long years of reconstruction. We cannot afford to punish the range and exhaust our feed supplies. Sooner or later we would be forced to reduce herds, perhaps when we needed them most. The range must not be overstocked.

It would be easy to plow up the dry range, plant the draws, seed every available acre and pray for a crop. But we can't afford to gamble on drought, and we can't afford to depend on land that may be worn out, washed out, or blown out before the war is over and peace is firmly established. The tremendous wheat expansion that followed World War I brought disasters that must not be repeated.

The job of winning the war will be hard because it will be a long haul, because our greatest needs are for crops we are not used to producing, and because of shortages of labor, equipment, fertilizer, and other things.

The farmers and ranchers of the Plains have ridden out duststorms and drought, grasshoppers, and depression, but today they face their greatest test—war.

They've faced a war before, and they helped win it. But in winning it many lost their land and their livelihood.



That need not happen again. Because out of the experiences of the hard years Plainsmen have learned a new way of farming. From the Republican River to the Canadian border, from the Red River Valley to the Rockies, thousands of farmers and ranchers have tested and have proved that conservation-management is the best way of increasing production now and insuring increased production for the crucial years just ahead.





Conservation Farming Is Efficient Farming

It makes the best use of all the land. It makes the best use of all the water.

While America is at war, we must have efficiency in agriculture as well as efficiency in industry. We cannot afford waste of land or water or labor on the farm any more than we can afford waste of metal or power or labor in the factory.

Any program or system of management for eliminating waste of soil, water, or productive capacity is a conservation program.

Plains farmers or ranchers who have already

undertaken to save more rainfall, maintain good grass cover, and prevent washing or blowing of the soil—with or without Government help—are already carrying out a conservation program.

They have been doing it because it is good business. It is practical and it is profitable.

Today, they have a third reason, more important than the others: Conservation farming is the surest way, the only way, to make certain that the war goals will be met this year, next year, and for as long as the war may last.

Conservation is nothing new in the Plains country. Practices like flood irrigation and the use of windbreaks and grassed waterways have been followed for many years.



Top picture—
Results of water spreading.

Middle picture—
A planted windbreak.

Lower picture—
A grassed waterway.



Here Are Some of the Are Doing To Insure tain Good Grazing

Contour strip cropping on sloping land helps prevent erosion, conserves moisture, and reduces wind damage. E. E. Rule, near Gillette, Wyo., has used the practice several years. It has improved yields in good years and has been especially valuable in dry years. In 1940, Rule cut about 40 bushels of wheat per acre.



Subsurface tillage—a method of cultivation that leaves residue from the previous crop on top of the ground—means more moisture penetration, less evaporation, less wind and water erosion, and increased yields. Edmund Heying, near Winner, S. Dak., subsurface-tilled a 10-acre field in 1940 as a test and was rewarded by 5 more bushels of wheat per acre and easier handling of the soil.



Construction of stock-water ponds is an important means of improving farm pastures and ranges. Spaced properly they help prevent concentration of stock and the damage to grass and soil such concentrations cause. This dam, developed with help from SCS technicians, is on the E. D. Taylor farm, Table Rock, Nebr. It holds enough water to last through extended dry periods.



Windbreaks are worth while. Along with strip cropping, subsurface tillage, and similar practices, they help shield soil and crops from the wind. Soil blowing and crop damage are diminished, evaporation is reduced, feed lots are protected from wind and drifting snow, homes are easier to heat. Five acres of this windbreak were planted in 1937 by SCS-CCC men on the farm of Achille Libbrecht, near Fargo, N. Dak.

Things Plainsmen Good Crops, Main- and Prevent Erosion

A water-spreading system converts waste water into profitable hay and pasturage. The system on the Elmer Eager ranch near Winnett, Mont. was built in 1937. In the crop years 1939 and 1940, Eager averaged 70 tons of hay and 16,000 pounds of seed from 77 acres of alfalfa.


Range management results in faster growing, heavier calves. Segregation of winter and summer ranges, development of numerous water supplies to distribute grazing evenly, and limited grazing are measures employed by the Medora Grazing Association in Billings County, N. Dak. Tom Porter, farming and ranching in the locality for 35 years, says calves now weigh more than they ever did—40 to 60 pounds more at weaning time, 100 pounds more as yearlings.

Wind strips of tall-growing Sudan grass like these on the farm operated by E. C. Brives in Fremont County, Wyo., protect adjacent soil from blowing during the fall and winter. Those Sudan strips are 6 feet wide, between strips of sugar beets on irrigated land.


Bromegrass in the eastern part of the Plains and crested wheatgrass in the western areas are giving double value to conservation-minded farmers. Alfalfa and bromegrass hold soil and water on this part of the George Langenberg farm in Wayne County, Nebr. In addition, the bromegrass yielded nearly 600 pounds of seed per acre (worth more than 10 cents a pound) and furnished excellent stock feed.




Here Are Some of the Things Plainsmen Are Doing To Insure Good Crops, Maintain Good Grazing, and Prevent Erosion




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A Good Farmer Is a Good Manager

The successful farmer or livestock man follows sound business principles. He doesn't gamble everything on one or two seasons. He doesn't trust entirely to luck with the weather. He doesn't depend on one crop for his living. He raises as much of his needs as he can. He keeps his land and equipment in good shape. He doesn't allow any land to be unused.

He devotes his land to the purpose for which it is best suited, and he doesn't raise wheat where grass should be grown. He grows the cash crops his country needs, and he grows them on his most productive lands, saving the riskier lands for safer crops, like pasture. He reduces risks of crop failure from unusual weather by following practices and measures that increase yields and decrease losses.

The farmer who does all this is giving greatest service to his country.

Jim Knick came to northeastern Montana from the Miami valley of Ohio 16 years ago. Every acre on his 680-acre farm is producing something useful or profitable. He runs his farm like a general store, always having a variety of things to sell. Last year 15 or more different products contributed directly or indirectly to his income, including winter wheat, spring wheat, oats, corn, barley, beef and dairy cattle, hogs, sheep, hay and pasturage, farm-garden vegetables, alfalfa seed and hay, chickens, geese, potatoes, fruits, and water-melons. Crested wheatgrass, on what had been abandoned farm land, yielded almost \$30 per acre for seed in 1941—the most profitable single crop. The whole farm is strip-cropped, mostly on the contour. The danger of erosion has been virtually eliminated. This farm won't break down under the pressure of war production.



Walter Peterson has been farming in eastern Wyoming, near Upton, more than 20 years. Like many Plains farmers, he began using conservation methods in an effort to pull himself through drought and crop failures.

With help from the SCS, he contoured a cornfield in 1937. It was a dry year, but he made a good crop. Each succeeding year, he carried his conservation plans a little further. He reduced his crop acreage and diversified more. He reorganized his field and pasture arrangement. He contoured more cropland, increased his livestock numbers, built a stock-water dam, seeded pasture to crested wheatgrass.

There were more dry years. 1940 was one of the worst. But Peterson's corn grew 6 feet tall with good-sized ears; his barley amounted to 300 bushels, oats the same, and wheat 500 bushels. And he produced 120 tons of hay.

Peterson had found that conservation farming was a good crop insurance in the dry years. In 1941 he learned another important fact:

Conservation farming pays extra dividends in good years.

Wheat on the contour yielded 29 bushels an acre; wheat not on the contour, 23 bushels. Oats on the contour yielded 26 bushels an acre; not on the contour, 18 bushels. Barley on the contour yielded 24½ bushels an acre; not on the contour, 18 bushels. All his corn and rye was on the contour, producing 35 and 20 bushels an acre, respectively.

Rye hay on the contour (21 acres) totaled 31 tons; oat straw, 54 tons; sweetclover (7 acres) 6 tons of hay. Twenty-three acres of crested wheatgrass produced 945 bushels of seed, and 46 acres of the same grass yielded 40 tons of hay.

And here's how his livestock program worked out. In 1937 he had 300 sheep, 6 cattle, 4 horses, and 40 hens. His lamb crop was only 70 percent. His range was in poor shape, hardly adequate for even that many animals, and he couldn't raise enough feed. By 1942 Peterson had 915 ewes, 300 lambs, 18 cattle, 6 horses, about 300 laying hens, and a 98-percent lamb crop.



These Men Are Producing "Food for Freedom"



Near Hebron, Nebr.—Herman Heller, cooperating with the Thayer Soil Conservation District, is using conservation farming methods to increase production while keeping his soil at home. Here he is shown pointing out the complete absence of washing or damage shortly after an extremely heavy rain. All his cultivated land is in contour-strip crops, and he reports yields well above others in his neighborhood who do not have conservation practices established. His less productive lands are planted to grass and now are yielding well.



Near McIntosh, N. Dak.—Just north of the South Dakota line, Oliver M. Dahl has found that it pays to use land properly. This picture, taken in 1940, shows him standing beside farm machinery abandoned by the former owner—concrete evidence of the hazard of wheat farming in this area. The farm is now a productive feed base for a livestock enterprise. Feed crops are raised in a strip-crop pattern, and the cultivated areas on leased land are seeded to grass. Stock-water dams are well spaced. Dahl also raises a good garden. Both wind and water erosion have been checked and the farm is making money. Dahl is a cooperator with the Cedar Soil Conservation District.



Near Faith, S. Dak.—Ed Hall, a cooperator with the Tri-County Soil Conservation District, has lived through the transition from livestock to farming and back to livestock. Deferred grazing, development of stock-water supplies, and other conservation practices have helped bring Hall's ranch back to productivity. The proper location of stock-water dams is accomplishing two things, he says. First is uniform use of the range, since water is available on all parts of the ranch; second is protection against drought. Hall and other stockmen maintain that they could have weathered 1934 and 1936 with adequate water and feed reserves.

Conservation Farming Beat Drought —It'll Help Beat the Axis

Near Steele, N. Dak.—Alfred Riskedahl is co-operating with the Kidder County Soil Conservation District. Reared on a farm nearby, he has been farming this land since 1936. This land blows easily, and 30 acres on the place was virtually abandoned by 1936. Wind strips, brome grass, and alfalfa have tied it down now, including the 30 acres. Riskedahl is converting his farm to a combination beef-dairy layout.

Near Froid, Mont.—The farm of Henry Hoyer, in the Froid Soil Conservation District, illustrates the advantages of planning the entire farm as a conservation unit, rather than merely applying individual practices to the existing fields. Everything on this farm is on the contour. Fields are strip-cropped with grass buffers, and the tamegrass pasture was terraced before it was seeded. There are no point rows in these large fields, and Mr. Hoyer has no difficulty operating large equipment. The round-end strips enable him to plow for almost 70 miles on the level with a four-bottom plow without lifting it from the ground.

In Converse County, Wyo.—James Willox cooperated with the S. C. S. to use flood water to improve several hundred acres of his pasture. The added water has increased the carrying capacity—that is, the ability of range land to feed livestock—more than three times, Willox says. Even in dry years, he declares, flood water is available at least when the spring runoff comes, but he cannot remember a year when there was not runoff at least three times. He's making use of water that formerly was wasted.





But Individuals Can't

Many obstacles are encountered in planning conservation programs for stepping up farm production that are too big or too complex to be overcome by the farmer or rancher alone. Weeds, gullies, floods, duststorms, insects, and droughts don't stop at a barbed-wire fence. These are common enemies that require united attack.

Other problems, like that of operating units too small to permit proper management, or like tax classification unfavorable to a change in land use, may require community action or governmental help. Farmers and ranchers may need technical assistance in planning dams, irrigation systems, rotations, and contour lay-outs. The land pattern of a community may be so complicated that leased units are small and scattered, making proper grazing, fencing, watering, and riding difficult and expensive. Other matters, like unsatisfactory lease arrangements, presence of "wild lands," cutthroat competition for grazing privileges, and similar economic and social problems, may stand in the way of sustained productive use of land and water resources.

These matters call for two kinds of action: Action by organized groups of farmers and ranchers, and action by local, State, and Federal Government.

Government has not been idle. Agricultural adjustment, farm security, farm credit, crop insurance, commodity loans, and soil conservation programs are examples of the response of the Federal Government. State governments have passed laws permitting organization of soil conservation districts, regulation of grazing, and other needed action. State and local governments are making progress toward equitable tax adjustments, safeguarding blow lands, and similar worth-while objectives.

But this is a democratic nation and there are many things that even government can't do. There are problems that call for group action—organized action by the people themselves. Groups of farmers and ranchers have more bargaining power than individuals. They can

Do Everything That Needs to Be Done

secure fairer, more equitable settlement of common difficulties. They can retain technical advisors from governmental agencies such as the Soil Conservation Service. They can enjoy the benefits of large-scale procurement of seed, trees, and other planting materials. They can spread the cost and use of large equipment among a number of operators. They can lease land and regulate its use for the common good. They can help solve large-scale problems, like floods and weed and insect infestations.

They can unite entire communities in attacking community problems or in obtaining community benefits—joining cattlemen, farmers, sheepmen, businessmen, civic organizations, and Government agencies into cooperative action. War has made it essential that farm people and townspeople plan and pull together.

Among the most successful organizations of farmers and ranchers in the northern Great

Plains are those created for the purpose of developing farm and range conservation programs. The severe drought of the early 1930's, coupled as it was with duststorms and depression, spotlighted the need for a type of organization that could help farmers and ranchers with problems of controlling erosion, conserving moisture, converting from crops to livestock, installing irrigation systems, regulating grazing, and so on. Under the pressure of bad years, Great Plains farmers found at least two types of land use organizations that got results.

Two examples will show how a good many agricultural communities on the Plains have organized and are organizing to insure more efficient and more productive use of their land and water resources. Communities like these are like battalions in the field—strengthening the battle lines of the Nation with food, fiber, and vital oils.



In Thunder Basin, Wyoming

Thunder Basin in northeastern Wyoming is a natural grassland basin as large as the State of Delaware. In 1934 thousands of acres of cropland had been abandoned after successive crop failures. Many farmers gave up and left. Cattlemen and sheepmen who couldn't expand their holdings found they could hardly make a living. Low prices compelled increases in herds—a greater load on land that couldn't carry it. About 100,000 acres of public domain and large tracts of abandoned land in the area were used largely on the basis of first come, first served. The herds of leaseholders were often forced to share their range with tramp stock.

The problem was too big and too complex for local operators to handle alone. Government men were asked to help, and with local citizens they worked out a plan of action.

The first move was the purchase of about 230,000 acres of abandoned farms, homesteads, and small grazing units by the Department of Agriculture. This enabled about 100 resident operators to liquidate and seek opportunity elsewhere, a chance they welcomed. The sellers paid all delinquent taxes against the purchased lands, bringing thousands of dollars to the counties and school districts affected. In

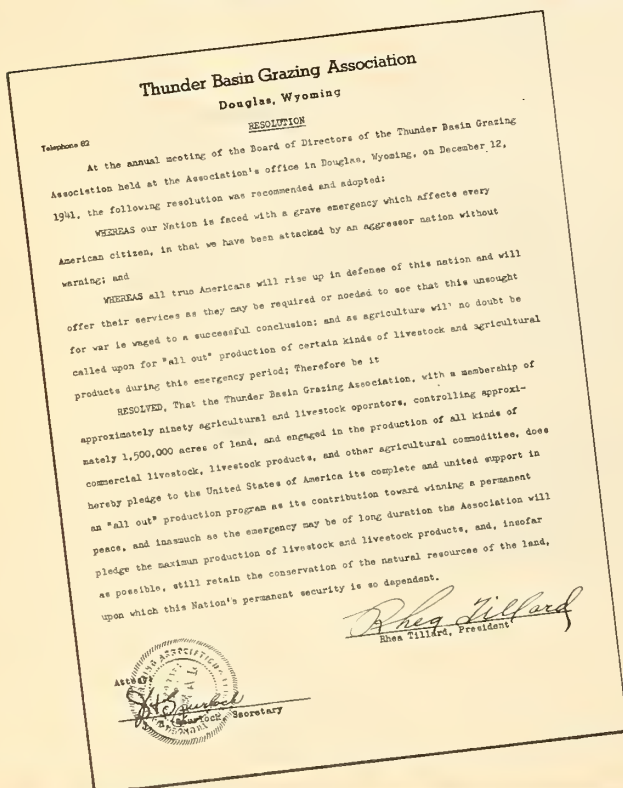
1936 the Thunder Basin Grazing Association was organized, governed by a board of directors of resident operators elected by the members.

The grazing association leased all the Federal and State lands and all the privately-owned land not already under lease. It then allocated grazing privileges to individual members in accordance with their qualifications and needs.

The association has helped small operators expand their units enough to support their families. At the same time, the rights of larger operators are protected. The directors have assisted operators in building units around their headquarters. In some cases this could not be done; so two community pastures were established, to be grazed in common under a permit system. More than 100 stock-water reservoirs were built, many springs were developed, wells repaired, fences built, and abandoned lands reseeded.

Today every acre of land within the area—1,139,000 acres—is under the control of the association or of responsible operators. Everyone participating owns the land he operates, leases it from the owners, or secures grazing privileges from the association. Competitive bidding for leases has been eliminated and invasion of tramp herds has been stopped completely. The association has determined the responsibilities for fence construction and maintenance of improvements, has set up trailing requirements, and has insisted on the procurement of better bulls for use in common grazing areas. Every rancher has a unit capable of furnishing his family a living. There is not a single relief case in the area, and tax delinquency has disappeared completely.

This, briefly, is how one ranching community solved a grave and complex problem by group action, with Government help where it was needed. This sort of *practical* democracy is working in hundreds of farming and ranching neighborhoods in all parts of the land—the sort of democracy that makes America strong.





Around the Town of Faith, South Dakota

In 1937, the South Dakota Legislature passed a law, providing that the farmers of any community might petition a State committee for the right to organize a soil conservation district.

The same year, under the leadership of a number of outstanding farmers, the million-acre Tri-County Soil Conservation District was organized in Mead, Perkins, and Ziebach Counties. After officers were elected, one of the first official acts of the district was to enter into an agreement with the Soil Conservation Service for obtaining technical assistance, materials, and equipment to aid them in their program.

Frank Gottschalk, a member of the board of supervisors, said recently, "At first we supervisors held off getting cooperation on our own farms, figuring on serving some of the others first. But my place was blowing and washing so badly I told the other supervisors I just couldn't wait any longer. I got all my cropland in contour strips, and even that first year (1938) I had some crops, while my neighbors had none. What's more, I've had crops every year since. Then, too, the grasses on the range are in fine shape now, with the protection they get through planned use."

The district started with a few pieces of equipment loaned by the SCS. Today it owns a 3-yard fresno scraper, 2 deep-furrow drills, a bulldozer, and an 8-yard LeTourneau scraper—all paid for by rentals. Near the end of the 1941 season, the district had three tractor outfits operating double shifts for 40 days trying to keep up with the demand. The district has helped farmers build almost 400 dams.

During the winter of 1938-39 duststorms were often so severe one could not see across the street intersections in Faith. Snow fences along the highway were drifted to the top with blow dirt, mostly from lands northwest of the city. The city leased most of this land and, with the help of the district, listed it in contour



strips. The irregular areas were seeded first to grain then to grass. In 1940 these lands produced one of the first stands of crested wheatgrass in the district. In 1941, 60 pounds of seed per acre were harvested from the grass strips. One leased area is still in the hands of the city and is entirely in grass. The operators of the other two leases are continuing the conservation practices. There have been no more duststorms.

The farmers of the district are giving a lot of thought to long-range planning. Ed Hall, one of the supervisors, says, "The provision of water through the construction of dams and supplementary feed supplies has encouraged a good many operators to get into livestock. Some means of protecting the units they have assembled must be found. Right now it is just an idea, but I feel that we are making progress. It will take a long time, though, before we can make sure of the stability and security of individual units."

The Tri-County Soil Conservation District illustrates how many farming communities today are finding the solution to their land and water problems—problems that must be solved if agricultural production goals are to be met this year, next year, and as long as may be necessary. Like the Thunder Basin ranchers, these farmers have discovered the tremendous power of group action.

Soil conservation districts afford farmers an opportunity to obtain technical advice, planting materials, equipment, and services that may be needed in carrying out a program for the most productive use of soil and water. Forty-two States including every State in the Plains, now have soil conservation district laws. There are more than 700 farmer-organized districts in actual operation; more than 98 of them—including more than 30 million acres—are in the northern Great Plains States alone.



Victory Program for Great Plains Farms

Here is a program for farmers and livestock men to help win the war. It is a program for producing more *now* and for keeping it up as long as the war may last. It offers security for the farmer and security for the Nation.

Produce and sell more foods, oils, and fiber

The outcome of the war depends heavily on the ability of American farmers to meet the demand for certain foods, oils, wood products, and fibers. The Nation needs increased production and marketing of all important farm commodities except wheat and short-staple cotton. More cattle and veal must be slaughtered than ever before. Conservation-farming methods help increase yield per acre and per animal now, help put all land and water to work, help maintain the productivity of the land for the years to come.

Use land only in ways for which it is suited

The first fundamental of farm and ranch conservation is that the physical characteristics of the land should determine the type of use to which it is put. Physical characteristics include soil type, climate, topography, situation, drainage, and natural vegetation. Badly eroded, steep, or sandy land unsuited to cultivation should be kept in grass. Land that is fertile and level or gently sloping with deep productive soils may be cropped more intensively, with proper rotations to maintain fertility.

Moderate slopes, where there is danger of wind or water erosion, may be cropped much of the time if suitable conservation practices are used. A grass and in some cases a grass-legume mixture in the rotation helps maintain productivity.

Use conservation practices for protection and improvement

On cropland, well-chosen conservation practices save water for growing crops, prevent soil washing and blowing, increase yields, and permit greater returns. On conservation-managed grazing land, livestock put on more total weight and make faster gains, dairy cattle give more butterfat, more grazing days are obtained, and the grass achieves more vigorous growth—protecting the soil and producing more forage.

Farm operators can often determine the general type of treatment needed on land that isn't showing best results and can often apply helpful practices themselves. Where the problem is difficult or complex or where technical advice may be needed, they can get advice from a soil conservation district, SCS technician, or county agent. Structures like dams, terraces, waterways, and flumes usually require the advice of trained men to assure maximum benefits. Farmers who desire to plan all or part of their farms for most efficient use of soil and water should investigate the farm-conservation planning service available through numerous soil conservation districts.



Conservation Practices to Increase Production

Recommended for use only where they are practicable—and where climate, soil, slope, erosion, and other conditions are suitable. Structures like terraces, irrigation systems, and dams should be built only under the guidance of trained men.

To conserve moisture on cropland.

- Subsurface tillage.
- Prevention of burning and overuse.
- Contour strip cropping; contour cultivation.
- Level terraces on long slopes and suitable soils.
- Proper rotation of crops.

To prevent water damage.

- Gradient terraces on slopes up to 10 percent.
- Diversion terraces to catch runoff and protect land below.
- Grassed waterways.

To increase productivity.

- Barnyard manure. Proper rotations, including grass.
- Use of crop residues.

To improve range and pasture.

- Delaying spring pasturing until grass is ready.
- Stock numbers based upon carrying capacity.
- Feed reserves ample for critical periods.
- Supplementary temporary pastures.
- Seasonal grazing, fencing, salting, weed clipping, and good quality stock.
- Seeding additional permanent pasture.
- On irrigated pasture: manure, commercial fertilizer, rotation grazing, and interchanging pasture and cropland.

To prevent wind erosion.

- Wind strip crops, strips not over 20 rods wide.
- Subsurface tillage.
- Prevention of burning and overuse.
- Stubble mulch (trashy fallow) on fallow land and use of strips of tall-growing row crops.
- Supplemental field shelterbelts.
- Use of erosion-resisting crops, proper crop sequence, grass buffers.

To provide additional water.

- Adequate stock-water ponds, springs, or wells for proper distribution of grazing.
- Wells for domestic use and gardens.
- Irrigation for crops from wells, water-storage structures, and stream diversions where practical.
- Flood irrigation for feed production.

To increase permanent vegetation.

- Establishing grass on steep slopes, low productive soil, and highly erodible areas.
- Seeding grass on idle acres.
- Fences, grass, and shrubs for gully control.
- Farmstead and feed-lot windbreaks, and wildlife plantings.

To protect and improve irrigated lands.

- Choice of crops adapted to the land.
- Conservation rotations, green manure and cover crops, barnyard manure, commercial fertilizers.
- Careful application of water.
- Improvements in system design and lay-out.
- Water use in line with crop and soil needs.
- Drainage of waterlogged soils.



Find out more about farm and ranch conservation methods that will help you produce more, help the country reach its Food for Freedom production goals, and help beat the Axis, from—

The nearest Soil Conservation Service office,
Your soil conservation district office,
Your county agricultural agent,
Your county AAA committee,
Your county War Board,
Or write to—

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